

60LT1101-9
(GP2-0287)

CLEAN VERSION OF AMENDMENTS

IN THE SPECIFICATION

Please accept the following specification paragraphs in re-written "clean form".

A clean version of the first paragraph on page 3 follows:

A1
In the most generic form, the invention may be described as a curable, thermosetting adhesive composition for use with thermoplastic adherends comprising a poly(arylene ether) resin having a number average molecular weight in the range from about 8,000 to about 13,000, a thermosetting resin, a toughening agent, a cure agent, and an optional plasticizer. In use, the composition may be blended, applied to the substrate to be adhered, partially cured or dried, and then fully cured joining the substrate to another adherend.

A clean version of the second paragraph on page 3 follows:

A2
A curable, thermosetting adhesive composition comprises a poly(arylene ether) resin having a number average molecular weight in the range from about 8,000 to about 13,000, a thermosetting resin, a toughening agent to compatibilize the poly(arylene ether) resin and the thermosetting resin, a cure agent, and an optional plasticizer.

A clean version of the paragraph bridging pages 3 and 4 follows:

A3
This invention is directed to an adhesive resin composition having better processability, exhibiting reduced B-staged (partially cured) friability, and minimal flow during lamination. Specifically, the composition, comprising a poly(arylene ether), a toughening agent, and a thermosetting resin, is applied to a thermoplastic substrate that may have an electrically conductive metal, such as copper, on one side. Thermosetting resins are polymers that form a three-dimensional cross-linked network of polymer chains that cannot be softened or reheated for additional use. Before they are cross-linked, thermosetting resins are fluid and must contain enough reactive functionality to form a three-dimensional network during curing. General classes of thermosetting resins include, for example, epoxy, phenolic, alkyds, acrylate, polyester, polyimide, polyurethane, bis-maleimides, cyanate esters, vinyl,

60LT1101-9
(GP2-0287)

A³
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benzocyclobutene resins, and benzoxazines. These compositions may further contain various catalysts, flame retardants, and other constituents, if so desired. The thermosetting components, such as those described above, may be used either alone or in combination with one another or with another thermoplastic resin. When used to coat suitable thermoplastic reinforcing material substrates such as thermoplastic polyimide, polyetherimides, polyesteretherimides, blends of poly(arylene ether) and polyimide, and blends of poly(arylene ether) and polyester, they furnish compatible substrates, particularly applicable for preparing laminated articles suitable for such applications as printed circuit boards, rigid flex circuit boards or any other articles where good dielectric properties are desired. The compositions, before crosslinking, are soluble in organic solvents, e.g., toluene, at elevated temperature and, while a gelling composition at room temperature, become liquid with shear, which facilitates coating of a substrate at room temperature. The cured adhesive layer materials prepared from the compositions are highly solder resistant, solvent resistant, moisture resistant, and flame retardant. The cured materials also have excellent dielectric properties and dimensional stability at high temperatures.

A clean version of the first paragraph on page 13 follows:

A⁴

Other useful thermosetting components comprise vinylic compounds, including triallylisocyanurate, triallylcyanurate, diallyl phthalate, diallyl isophthalate, diallyl maleate, diallyl fumarate, diethylene glycol diallylcarbonate, triallyl phosphate, ethylene glycol diallyl ether, allyl ethers of trimethylolpropane, partial allyl ethers of pentaerythritol, diallyl sebacate, allylated novolacs, allylated resol resins, polyimides, phenolic resins, benzoxazines, polyurethanes, and/or cyanate esters. These various thermosetting resins can be used either individually or in combination with one another.

A clean version of the fourth full paragraph on page 14 follows:

A⁵

A toughening agent is included in the composition to enhance blending and crosslinking of the poly(arylene ether) and the thermosetting resin portion of the adhesive composition. The presence of toughening agents generally reduces friability of the partially cured composition. In the final blend, the functionalized poly(arylene ether)s are commonly